

SPRING STRUCTURE WITH STRESS-BALANCING LAYER

Linda T. Romano

David Kirtland Fork

ABSTRACT

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A stress-balancing layer formed over portions of a spring metal finger that remain attached to an underlying substrate to counter internal stresses inherently formed in the spring metal finger. The (e.g., positive) internal stress of the spring metal causes the claw (tip) of the spring metal finger to bend away from the substrate when an underlying release material is removed. The stress-balancing pad is formed on an anchor portion of the spring metal finger, and includes an opposite (e.g., negative) internal stress that counters the positive stress of the spring metal finger. A stress-balancing layer is either initially formed over the entire spring metal finger and then partially removed (etched) from the claw portion, or selectively deposited only on the anchor portion of the spring metal finger. An interposing etch stop layer is used when the same material composition is used to form both the spring metal and stress-balancing layers.